TILBURG UNIVERSITY

Seeing Bias: Exploring Implicit Attitudes in Personal Worth Belief Systems

Master's Thesis

Abstract

This paper explores the impact of pictures of people on high-order personal worth belief systems. It focuses on people's self-worth (first order beliefs), the worth they place onto others (second order beliefs), and what they think others value them (third order beliefs). Beliefs are elicited through the use of a survey (N = 247) divided into three main sections: elicitation of beliefs about self-worth, high-order beliefs without pictures, and high-order beliefs with pictures. Findings show a significant discrepancy among beliefs and their demographic determinants, with first order beliefs being highest, followed by second order beliefs, and third order beliefs being lowest. The presence of pictures affects third order beliefs positively, but does not significantly impact second order beliefs. Women are found to evoke higher second and third order beliefs. Lastly, pictures of black people elicit varied results on high-order beliefs, ranging from positive to non-significant depending on the specification. Implications for these results are discussed.

Keywords: high-order personal worth belief system, self-esteem, metaperception, dissonant beliefs, visual cues, implicit attitudes, beliefs about others, beliefs about gender, beliefs about race, ingroup bias, ingroup-outgroup beliefs

Chiara Gerbino

SNR: 2037146 - ANR: 577643

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Supervisor: Dr. Patricio Dalton

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1 Introduction

Morality and the fair treatment of others are at the heart of the ethical principles that govern our social interactions and relationships. Central to this notion are the fundamental principles set out in the Universal Declaration of Human Rights, which emphasize the right of every individual to be treated with equality and respect, regardless of their background or status. This idea that every person, by virtue of their humanity, deserves equal consideration and respect is deeply embedded in moral philosophy, human rights frameworks, and even religions. Rousseau famously claimed that all human beings are born equal and free, and Kant argued that we should treat all human beings as 'ends in themselves', rather than merely as means to an end - humans are free, rational beings equally and intrinsically worthy of dignity and respect. For these philosophers, regardless of our physical, intellectual and cultural differences, we are morally equal simply by virtue of being human. This principle of fundamental, inalienable equality is at the heart of many contemporary discussions about human and civil rights.
However, discrimination and prejudice continue to exist, deeply ingrained in social, cultural, and institutional structures. These biases often manifest themselves in subtle or overt ways, resulting in unequal access to opportunities, resources and justice for marginalized groups.

Behavioral economics can provide valuable insights into the underlying psychological mechanisms that perpetuate prejudiced beliefs and behaviors towards others. Up to this point, much of behavioral economic research regarding beliefs has focused on how they affect economic decision making, often using psychological games to test players' beliefs about others. Ordered beliefs have traditionally been used in Cognitive Hierarchy Theory to represent higher levels of player rationality. These theories show that decision making in economic scenarios is not always straightforward, but is heavily influenced by individuals' perceptions of others' choices and their level of cognitive reasoning. More recent research has added a further layer of complexity to this framework by considering the impact of emotions. For example, Geanakoplos et al. (1989) examined the decision making of a player when their expectations are driven by strong emotions such as fear, relief, anger, pride and shame, and how being influenced by emotions can ultimately lead to economically disadvantageous results.

This paper presents an alternative view of beliefs: rather than referring to the beliefs an agent holds about the decisions of another agent, this paper focuses on individuals' beliefs concerning their own worth and that of others. The first type of belief this paper will center on is an individual's belief about themselves, or their self-worth. This will be referred to as *first order beliefs*. The second type of belief are those that people form regarding other's worth. This will be referred to as *second order beliefs*. Lastly, the third type of belief is what people think others think about them. This will be referred to as *third order beliefs*.

This high-order personal worth belief system can characterize different ways people perceive themselves, how they see others and how they think others see them. Distorted perceptions caused by low self-esteem, mental health issues, or implicit and explicit prejudices are often a significant barrier to achieving social cohesion and can result in significant economic losses. When individuals hold biased beliefs and prejudices, whether due to stereotypes, cultural influences or personal experiences, this can lead to discriminatory behavior in various areas of life, including employment, education and social interactions. It is in the best interest of policymakers to effectively identify the existence of distorted beliefs and address their causes in order to create a just society that promotes social harmony and economic prosperity. Behavioral economics can help with the first step: comparing and finding inconsistencies within this belief system can shed light on how people tend to view themselves and others in society.

However, it can be a challenge to bring out prejudiced beliefs. People may be reluctant to disclose their biased beliefs because of the negative social connotations associated with such attitudes. Social norms often condemn discriminatory attitudes, and promote principles of equity and fairness (Crandall et al., 2002). Therefore, to avoid the negative externalities of being perceived as prejudiced, people may lie to project an image of impartiality in line with prevailing social expectations that emphasize politically correct behavior (McConahay, 1986).

Another factor that complicates the assessment of individuals' prejudiced beliefs is the limited awareness that individuals may have of their own biases. Explicit prejudices, such as taste-based discrimination and statistical discrimination, are the result of conscious cognitive processes. In contrast, implicit prejudices arise from subconscious mental processes and often operate contrary to the individual's intended beliefs (Devine, 1989). The difficulty in recognising implicit

prejudice can be attributed to its inherently unconscious nature. Furthermore, in cultural contexts where discriminatory attitudes are deeply embedded, certain biased beliefs may be perceived as socially acceptable and normative, adding to the challenge of recognising and addressing implicit bias.

These barriers can be mitigated to some extent through the use of an anonymous survey approach to data collection. This does, however, bring with it its own set of considerations. Direct questioning of individuals about their prejudiced beliefs, even under the guise of anonymity, can be a source of discomfort or even be perceived as confrontational. Respondents may still be tempted to lie, even if only as a self-soothing behavior. To address this issue, the survey methodology will move away from directly asking respondents about their views on different gender or racial groups. Instead, respondents will be asked to rate the value they place on a hypothetical individual, subtly incorporating race and gender by using pictures. By presenting respondents with a series of photographs of people to evaluate, any differences in the values assigned can potentially indicate underlying biases. This indirect approach allows beliefs to be elicited without causing alarm or defensiveness in respondents.

This paper is structured as follows: after the introduction, section 2 reviews relevant literature on beliefs, the influence of images on evaluations, and discrimination. Based on the insights gained from the literature, research questions and hypotheses are formulated in section 3. The survey design and experimental method used are described in section 4, while the results are presented in section 5. Finally, section 6 discusses the implications of the findings, limitations and suggestions for further research.

2 Literature Review

2.1 Perception of the Self & Others

How do you see yourself? And how do you see others? We frequently contemplate on our own worth, and the worth of those around us. We may even be led to make comparisons between ourselves and our peers: after all, it is normal for people to have varying levels of expertise across different domains, allowing for comparisons of abilities. Such comparisons are important, as they can serve as a motivator for self-improvement. However, although these thoughts are normal, they raise questions about the nature of human judgment. Without a reference point, is it reasonable to make immediate assumptions about superiority or inferiority based solely on first impressions? Is one human life truly ‘worth more’ than another? The answer is no, according to ethical considerations that emphasize the intrinsic and inalienable value of human life. However, individuals often hold inconsistent and asymmetrical beliefs about themselves and others, sometimes without realizing it. The aim of this study is to take a 'snapshot' of people's initial beliefs about others before their interaction with them. We begin by analyzing relevant literature about people’s perceptions of themselves and others, and how we may expect these to differ.

The beliefs that we hold about ourselves, or our first order beliefs, are closely tied to our self-esteem. Classically, self-esteem has been defined as an individual's subjective evaluation of their self-concept, encompassing beliefs about worth and abilities that range from positive, or self-affirming, to negative, or self-deprecating (Hewitt, 2020). Still, self-esteem is not constructed in a vacuum, but is closely related to social dynamics and the basic human need for belonging. Given its socially driven nature, Hewitt (2020) identifies four core concepts shaping self-esteem: acceptance, evaluation, comparison, and efficacy. Self-esteem is therefore dependent on receiving unconditional acceptance from parents in childhood and from social groups in later life, on receiving positive evaluations from relevant individuals, on making positive comparisons with peers and idealized versions of oneself, and on being able to act with competence and efficiency. People's yearning for a positive self-concept motivates behavior; they conform to gain approval and associate with groups reinforcing their positive self-image, sometimes even leading to antisocial behavior if it aligns with a deviant reference group's values.

So, given that people's self-esteem is closely tied to the comparisons they make between themselves and others, they must also depend on their perception of others. But how do people perceive those around them? We can safely say that people's perceptions of themselves are different from their perceptions of others: after all, people are deeply immersed in their own feelings, emotions and cognitions, whereas their experience of others is completely dominated by what they can see (Jones & Nisbett, 1987). As a result, people tend to perceive themselves through introspection, and others through extrospection - that is, we judge others based on what we see, but we judge ourselves based on what we think and feel. The asymmetry between how people evaluate themselves and others' behavior can often become the basis of common cognitive illusions and biases. For example, people's focus on their own hopes and aspirations leads to unrealistic positivity about themselves and their future (Taylor & Brown, 1988): individuals tend to believe that they are more likely to become wealthy, less likely to contract contagious diseases, and less likely to be victims of crime or involved in car accidents than those around them (Robertson, 1977; Harris & Guten, 1979; Weinstein, 1980). This unrealistic positivity also extends to the evaluation of their own traits, as people tend to rate their attributes and characteristics more highly than they rate those of others (Taylor et al., 2014). It is also common for individuals to misjudge their competence and abilities. People often tend to believe that they are better than the average person in various domains, such as intelligence, attractiveness, and leadership abilities (Alicke et al., 1995; Larwood & Whittaker, 1977; Greitemeyer, 2020). Furthermore, those lacking proficiency in a specific domain tend to overestimate their skills due to an inability to accurately assess their performance, while experts in a field may instead underestimate their abilities, assuming others have similar competence levels (Kruger & Dunning, 1999).

Still, these cognitive biases aren't necessarily negative. While our inclination to overestimate ourselves can lead to errors in judgment, it may very well also have adaptive benefits: research has shown that overly positive self-evaluations, exaggerated perceptions of competence, and unrealistic positivity are associated with higher levels of physical and mental health. In addition, these illusions may promote other aspects of mental health, such as the ability to care for others,

experience happiness or satisfaction, and engage in productive and creative work (Taylor & Brown, 1988; Taylor et al., 2003).

This begs the question: if maintaining overly positive and unrealistic self-beliefs correlates with better mental health, would poor mental health result in a more grounded self-perception? The concept of 'depressive realism' challenges the notion that a grounded and realistic view of oneself is a symptom of good mental health. Evidence suggests that people who have low self-esteem, are depressed, or both have more balanced views of themselves (Coyne & Gotlieb, 1983). Individuals who exhibit these traits tend to recall self-relevant information, whether positive or negative, with equal frequency (Kuiper & Derry, 1982). In addition, their self-evaluations more closely matched the evaluations of others and of impartial observers (Brown, 1986; Lewinsohn et al., 1980). Overall, it seems that people who are prone to emotional or psychological distress are more likely to evaluate information about themselves fairly and unbiasedly than those who are emotionally healthy.

However, it is important to stress that prioritizing realism over self-esteem and mental health is not optimal: emotional and behavioral disorders, such as anxiety and depression, have been consistently linked to low self-esteem (Sowislo & Orth, 2013) – if anything, low self-esteem can be considered a more problematic form of self-distortion than overly positive self-perception, given the negative consequences associated with it. Research has shown that people with low self-esteem are more likely to engage in behaviours that put themselves and others at risk, such as unsafe sexual practices, eating disorders, suicidal ideation, criminal activity, alcohol and substance abuse, and to experience poverty and unemployment (Donnellan et al., 2005; Quidt & Haushofer, 2016; Emler, 2020) – although, research has also shown that violent behavior can be linked with overly high self-esteem, perhaps as a consequence of people finding acceptance in a deviant group (Bushman & Baumeister, 1998; Emler, 2020).

Self-esteem does not only fluctuate based on mental health, but also varies significantly depending on factors such as gender, race, and age. In general, women tend to have slightly lower levels of self-confidence than men, especially during adolescence (Kling et al., 1999; Bachman et al., 2011; Orenstein, 2013; Sprecher et al., 2013). Notably, this does not hold for black people, as African American women tend to have higher self-esteem than their male

counterparts (Sprecher et al., 2013). With respect to racial differences, African Americans generally have the highest levels of self-esteem, followed by Whites, Hispanics, and Asians (Gray-Little & Hafdahl, 2000; Bachman et al., 2011; Erol & Orth, 2011; Sprecher et al., 2013). Self-esteem typically increases from late adolescence to middle adulthood, peaks at around age 50 to 60, and then declines at an accelerating rate into old age (Shaw et al., 2010; Orth & Robins, 2014; Bleidorn et al., 2016). Shaw et al. (2010) found that the decline in self-esteem over time was more pronounced for black people than for white people. Furthermore, Erol & Orth (2011) found that although Hispanics typically have lower self-esteem than Blacks and Whites during adolescence, their self-esteem tends to increase significantly over time, resulting in higher levels of self-esteem than Whites by the age of 30.

Furthermore, research has shown a concerning link between experiencing discrimination and having low self-esteem. Studies show that LGBT+ people who have faced discrimination are more likely to have low self-esteem and suffer from mental health issues such as anxiety, depression, substance abuse, and suicidal ideation (Russell & Fish, 2016; Yarns et al., 2016).

As previously mentioned, self-esteem is also strongly influenced by people's desire for acceptance and positive evaluations from peers. This means that beliefs about the beliefs of others, or our third order beliefs, are of considerable importance in human behavior. Concerns about how one is perceived by others are deeply rooted in human nature, and for good reason: the judgments and assessments of others have an impact on various aspects of life, from self-esteem and identity formation to workplace performance and career success (Grutterink & Meister, 2022). For example, positive self-perceptions and beliefs about others' positive views can enhance self-esteem and social confidence, while negative self-perceptions and beliefs about others' negative perceptions may lead to social anxiety and difficulty in interactions.

Central to this dynamic is metaperception, the process of how individuals perceive the way others perceive them. It involves not only understanding how you see yourself, but also how you believe others see you. 'Believe' is the key word here: how people determine how others see them does not depend on the feedback they receive from others, but is derived entirely from their own perceptions of themselves. In fact, research suggests that there is a widespread asymmetry between what people believe and what they think others believe (Dustan et al., 2020; Bursztyn et

al., 2020; Bursztyn & Yang, 2022). Individuals often misinterpret feedback from others, overestimate the consistency of others' perceptions of them, and have a better understanding of how others view them in general than of how they are viewed uniquely by specific individuals (Kenny & DePaulo, 1993). For example, socially anxious people who feel strongly about wanting to make a certain impression but don't feel confident about their ability to do so often feel that others will judge them negatively (Schlenker & Leary, 1982). This belief persists even in experimental settings where they receive feedback identical to that of non anxious individuals (Pozo et al., 1991).

Metaperception can thus be seen as a facet of self-perception, by being the perception of oneself through the eyes of others. Cooley's (2017) notion of the 'looking glass self' illustrates this phenomenon. It describes how people look into the eyes and minds of others and imagine how they are perceived by them, influencing emotional responses such as pride or embarrassment. These strong emotions help shape people's social interactions, their evolving sense of self, and their adaptability in social contexts: studies in the field of social psychology have shown how people instinctively "learn to be different to different people" (Cooley, 2017), almost as if they were wearing a different mask best constructed for each social situation. Ultimately, identity construction is influenced by these 'masks', which are constantly processed, revised and reconstructed in response to different groups' reactions to the individual. Identity may therefore be less about the core of who someone really is and more about the construed image – that is, people's internal sense of how they are understood by others and their associated beliefs about what other people expect of them (Cooley, 2017).

2.2 Impact of Visual Cues on Empathy & Valuation

Economic analysis typically focuses on the extrinsic value of individuals, rooting their worth in the measurable contributions they make to the economic system or society at large. This utilitarian view measures value based on the impact an individual has, either directly or indirectly, on production and collective welfare. However, this approach raises moral concerns by oversimplifying the complexity of human value. In contrast, ethical considerations are often based on the concept of intrinsic value, particularly in the fields of ethics and moral philosophy.

It suggests that every individual, simply by virtue of their humanity, possesses an intrinsic value that transcends their utilitarian contributions. It emphasizes the notion that individuals are valuable in and of themselves and deserve equal consideration and respect simply by virtue of their existence. Recognising and appreciating the intrinsic value of others is the basis for empathy – a deep understanding and sharing of emotions – and fosters mutual respect that goes beyond external contributions.

Empathy, in its ability to promote the common good and nurture a harmonious social environment, is a crucial step in moving past self-centered concerns to a genuine care for the wellbeing of others. Although various theorists have offered unique definitions of empathy (see Cuff et al., 2016, for a review), there is general consensus that empathy is characterized by two main aspects: cognitive and emotional. The cognitive dimension of empathy, also called 'perspective-taking', involves understanding and sharing the perspectives, thoughts, and emotions of others (Batson, Early, & Salvarani, 1997). Conversely, the affective dimension of empathy refers to the capacity to share and resonate emotionally with the observed states and experiences of others (Davis, 1980). The ability to understand and share other people's emotions is essential for human connection and for compassion, cooperation and collective responsibility (Mead, 1934). Moreover, this ability has been associated with the development of moral reasoning (Haan et al., 1976) and altruistic behaviors (Batson et al., 1991; Eisenberg & Miller, 1987).

Empathy and discrimination have been shown to be interrelated, forming a dynamic loop where one influences and shapes the other. Discriminatory practices can negatively impact the mental, physical and overall well being of the targeted group (Vines et al., 2017). Furthermore, these same behaviors contribute to the marginalization, exclusion and the underemployment of minority groups (Allan and Smylie 2015; Pieper & Mohammadi, 2014). This in turn has a number of cascading negative effects: research has shown that people belonging to minority groups who have experienced discrimination may in turn show less prosocial behavior and empathy at later stages (Davis, & Clark, 2022). On the contrary, people who are more empathetic are less likely to be prejudiced or discriminatory (Hansson et al., 1978).

This leads us to one of the main questions tackled in this paper, that being whether imagining someone or viewing an actual picture of them has a greater impact on boosting feelings of empathy and respect. The focus is on understanding which of these two approaches causes an individual to place a higher value on the target.

Social psychologists generally align with one of two perspectives on empathy: some contend that empathy entails identifying oneself with others, while others claim that the person for whom empathy is felt becomes included in the self (Batson et al., 1997). Regardless, both perspectives are consistent with the idea that the task of giving judgment on someone's value requires a certain level of 'self-other merging'. While this concept is mostly used in the context of perspective taking exercises in empathy studies, where the degree of self-other overlap is higher, it can be argued that there typically is some degree of natural overlap between representations of self and other (Davis et al., 1996).

In the situation in which no picture is presented, the respondent can only identify themselves in the "imagined" person's position; there is no concrete other for the respondent to include into themselves. This does not necessarily mean that this type of self-other merging isn't effective in creating an empathic connection. Novey (1958) defined mental representation in terms of perception and the mechanisms of internalization, projection and identification. He defined a mental image as the psychological image of an external object within the mind. When creating the mental representation of a generic someone, people tend to project their own characteristics onto it. This can be attributed to the false consensus effect: opinions and attitudes of the self are broadly attributed to other people in general (Marks & Miller, 1987). So, when individuals are prompted to envision a generic or average person, they often draw upon their own beliefs, preferences, and characteristics, assuming that these attributes are widely shared across the population. Every representation of the outside world and the self is interpreted based on the individual's experiences and perceptions, which in turn influences their mental representations (Beres & Joseph, 1970). This leads to the act of imagining a "generic" person resulting in this vision being highly subjective, sharing common characteristics with the imaginer. However, this mental representation is an abstract concept, and can be challenging to relate to.

When a picture is provided, the respondent can not only imagine themselves in the other person's position, but it is now possible to include the target person in their own sense of self. It could be that seeing a picture of someone could lead to a stronger connection in understanding and identifying with the other person, possibly leading to higher valuation scores – after all, it is more natural to recognise similarities with someone you are looking at directly, compared to someone you are imagining. It has been shown that having characteristics in common can make it easier for people to empathize with and project beliefs onto a target (Janezic & Arsenault, 2021; Robbins & Krueger, 2005), indicating that how similar we think we are to others is influenced by how easily we can recognize examples of that similarity. In other words, when we judge how alike we are to others, it's like a quick and "top-of-the-head" thought that comes to our mind (Taylor & Fiske, 1978). This means, however, that just as quickly as we can notice significant similarities with a person, like their gender, race, hair color, and age, recognizing the ways in which we differ from them is just as immediate. In the face of prejudiced attitudes, looking at a picture of a person can lead to a reduced valuation of them, especially if the characteristics emphasized by the prejudiced attitudes are present.

Still, there may be another, less obvious reason why being presented with pictures of people could lead to higher valuation scores. There may be some degree of 'watchful eyes' effect at play. Experimental research on the topic has shown that when people feel like they are being looked at, there is an increase in prosocial behavior and decrease in antisocial behavior (Dear et al., 2019). For example, including a picture of human eyes to charity donation buckets in supermarkets led to a 48% increase in donations (Powell et al., 2012). It has also been shown that eye cues increase generosity, both seen as the probability of a donation being made to the second player, and the amount of money donated, in the Dictator Game (Hakey & Fessler, 2005; Nettle et al., 2013). Burnham and Hare (2007) explain the 'watchful eyes' effect through their 'evolutionary legacy hypothesis', which suggests that economic behavioral anomalies are partly caused by a mismatch between human ancestral conditions and modern conditions, which led us to develop a strong sensitivity to feeling watched. This behavior was initially developed as a protective measure against predators; later, in social groups, it was used to maintain one's reputation. This theory is backed by a substantial amount of neuropsychological research: according to Conty, George, and Hietanen (2016), eye-cues easily capture attention, triggering

self-referential processing and unconsciously heightening concerns about social perception. This can alter behavior by making us feel watched and like our reputation is at risk, even when that isn't the case. Being presented with pictures of people could elicit the 'watchful eyes' effect, leading to higher valuations, firstly by decreasing antisocial behaviors such as discrimination and increasing prosocial behaviors such as empathy.

The impact of seeing someone on the perceived valuation of the person has important implications in everyday decision making. How much someone is valued at a first glance can influence people's willingness to engage, trust, and cooperate with them. This makes it so that most research on the impact of images is practical, trying to understand the impact of photos on economic decisions and consumer behavior. Research has shown that pictures of people can lead to increased engagement and trust in the context of advertisements, e-commerce, and social media (Steinbrück et al., 2002; Bakhshi et al., 2014). However, other studies have yielded contradictory findings, suggesting that photos in e-commerce may diminish credibility and erode trust (Riegelsberger & Sasse, 2002; Riegelsberger et al., 2003). This means that although individuals generally respond positively to photos of people, they remain suspicious of manipulative advertising tactics.

The exploration of the effect of pictures has also been applied in behavioral economic studies. Photos of participants have been shown to lead to increased trust and cooperation between players in a variation of the Prisoner's Dilemma (Zheng et al., 2002). Burnham (2003) studied photo effects in the Dictator game, where dictators view pictures of recipients or recipients receive pictures of dictators. The likelihood of sharing the allotted money was found to increase significantly in both treatments. The study has two important implications: first, dictators show more generosity when presented with a picture of the other player, reinforcing the link between prosocial behavior and the ability to humanize the recipient through a photo. Second, dictators are more generous when they know that the other player knows what they look like. When a visual link is established between the lack of generosity, the negative judgment of the recipient, and the dictator's likeness, prosocial behavior increases. In other words, targeting third order beliefs also increased generosity.

The inclusion of a photograph on a work resume has also been the subject of significant research due to its potential impact on employment opportunities. Results suggest that photos tend to benefit people who are perceived to be attractive and of white ethnicity. However, when it comes to women, perceived attractiveness appears to have an ambiguous effect. While some studies have shown that CVs featuring an attractive woman receive more callbacks (Busetta et al., 2013; Patacchini et al., 2015), others have found that attractive women actually receive fewer callbacks compared to plain or unattractive women (Ruffle and Shtudiner, 2014). Furthermore, Daab (2021) found that high-effort resume photos reduced the perceived morality of female candidates, which lowered interview chances and potential salaries. When it comes to male candidates, attractiveness had a neutral to positive effect (Busetta et al.; 2013; Ruffle and Shtudiner, 2014; Patacchini et al., 2015).

While there's extensive research showing that white resumes tend to receive more callbacks than non-white resumes (Galarza & Yamada, 2014; Weichselbaumer, 2016), there number of studies specifically focusing on non-white individuals to determine if resumes with ethnic names receive more callbacks with or without photos is limited. Arceo-Gomez & Campos-Vazquez (2014) found that, despite indigenous profiles receiving fewer callbacks compared to European and Mestizo profiles, they still received more callbacks than when no photo was included in the resume. However, the authors mention that this trend might be explained by the common practice in Mexico of always attaching a photo to resumes. Further exploration of this topic could help understand the overall impact of including pictures on callback rates and add to the body of research examining how seeing pictures of individuals influences empathy and perceptions of their worth in everyday contexts.

To put it simply, the practical impact of photographic cues on human behavior can be difficult to predict. How someone reacts to an image is highly subjective: factors such as attractiveness, physiognomy, micro-expressions, or even subconscious associations of faces with past experiences are factors that are difficult to capture in studies and can influence someone's perception of a person based on their image alone. While research such as the study presented in this paper provides valuable insights into immediate reactions to images of individuals, it is

important to recognise that practical applications and repeated trials on different samples may produce different results.

2.3 Implicit Discrimination

As seen in the previous section, feelings of empathy can be enhanced by similarities between two people. Conversely, the perception of different characteristics in other people can be an active source of negative or prejudiced feelings. As empathy increases the degree to which people value others, discriminatory views can have the opposite effect. Classic economic theory considers two main types of discrimination: taste based and statistical discrimination. Taste based discrimination, brought forward by Becker in his The Economics of Discrimination (1857), arises from an inherent distaste for a particular group of people. On the other hand, statistical discrimination arises when people have imperfect information about individuals they interact with, and assess their value based on the groups – such as race, gender, social class – people belong to.

Nevertheless, discriminatory sentiments have become more covert in modern society. This shift is due in part to a change in societal attitudes against directly endorsing prejudiced remarks (McConahay, 1986). Individuals may appear to be non-racist or non-sexist on the surface, but secretly harbor negative stereotypes and prejudices towards marginalized groups. This covert bias could be rooted in the perception that explicit and old-fashioned prejudicial remarks are a thing of the past, or it may stem from a resentment toward the increased attention and favorable treatment that marginalized groups receive in the media, workplaces, and politics (Swim et al., 1995). Even when anonymity is guaranteed, people may be reluctant to deviate from prevailing social norms when answering politically and morally sensitive questions (Greenwald and Banaji, 1995). As a result, they may choose socially acceptable responses that hide their true feelings from others and even from themselves (Berndt Rasmussen, 2020).

Yet, if an individual genuinely does not hold any resentment or prejudiced feelings towards minority groups, then they should not show any signs of implicit bias in their behavior. This would mean that individuals expressing non-biased beliefs are truthful in reporting their convictions and are not trying to hide what they truly believe to fit socially acceptable norms.

Recent studies have focused on this more subtle type of social behavior, which takes place without us being aware of it, through what are defined as implicit or unconscious processes (Greenwald and Banaji, 1995). Individuals are no longer seen as having complete, conscious and intentional control over their perception of others at all times, but instead find themselves acting in ways that are not fully deliberate (Greenwald & Krieger, 2006). Still, the idea that implicit bias is completely inaccessible to the conscious mind has been called into question (Hahn and Gawronski, 2019).

This more subtle form of discrimination, henceforth referred to as implicit discrimination, is deeply embedded in theories of modern sexism and racism and is difficult to overtly identify, although there are several ways of measuring it. One widely used approach is the Implicit Association Test (IAT) (Greenwald et al., 1998). This computer-based test assesses the strength of associations between concepts, such as gender or race, and attributes, revealing implicit biases through reaction time measures. Previous research using this method showed faster reaction times when associating black people with negative terms (Nosek et al., 2007). Ethnic versus non-ethnic names have been used as a proxy for racial categories to uncover implicit biases associated with ethnicity, with less significant results (Don van Ravenzwaaij et al., 2010).
Another method used to identify implicit biases is facial electromyography (EMG). This technique measures the subtle activity of facial muscles in response to a stimulus, typically visual, related to a particular social group. Research using this method in the area of racism has typically shown the presence of anti-black implicit bias (Vanman et al., 1997; Vanman et al, 2004). The result of the third experiment conducted by Vanman et al. (1997) is of particular interest to this research: participants were shown a sequence of images featuring both white and black individuals. They were then instructed to rate the perceived friendliness of each person on a scale from 1 to 6, while their facial expressions were monitored using EMG. Although participants rated black targets as friendlier, the EMG data revealed a more negative facial reaction towards them – this may indicate an effort to self-report as unprejudiced. Moreover, the authors suggest that in Western society, involuntary emotional responses are more likely to reveal bias against racial out-groups than voluntary expressions of emotion, hence the importance of understanding implicit behaviors in people.

2.4 Sexism, Racism & Ingroup-Outgroup Attitudes

Although prejudicial beliefs are often implicit, the study of sexist and racist stereotypes in their overt forms can help us understand how these unconscious behaviors manifest. Understanding the effects of racism and sexism on the targeted groups provides insight into how results in second and even third order beliefs may differ.

Racism and sexism have a long history of association; comparisons have been made on the way in which discriminatory attitudes show themselves, such as individual stereotyping and institutional discrimination, as well as on the psychological repercussions on those affected (Hoff & Walsh, 2018). Common stereotypes depict both black people and women as intellectually inferior, lacking ambition, emotional, and less competent, contributing to their exclusion from educational, economic and political spheres (Braddock & McPartland, 1987). Furthermore, both contemporary manifestations of sexism and racism are characterized by the denial of continued discrimination, antagonism toward minorities' demands, and lack of support for policies designed to help them (Swim et al., 1995).

In spite of their similarities, racism and sexism are fundamentally distinct phenomena with unique consequences for those who are targeted. In particular, gender has proven to be a unique case for intergroup relations theorists. Reproductive needs, childcare and social ties make women important partners for men. This meant that sexism had to allow a high degree of gendered contact – this is unlike racism against blacks, which aimed to segregate them from white society (Smith & Stewart, 1983). In their theory of sexism, Glick and Fiske (2018) explore men's ambivalent feelings towards women. They recognize two primary expressions of sexism: hostile sexism, characterized by direct prejudice against women, and a more subtle manifestation defined as benevolent sexism. The latter involves treating women in ostensibly positive ways according to the perceiver's subjective judgment, but these behaviors ultimately undermine women. Even with people who are benevolently sexist often being well intentioned, this form of sexism is rooted in harmful stereotypes that reinforce male dominance, portraying women as meek, pleasant yet incompetent, requiring help and protection (King, 1973). Still, this perception of women as kind and sensitive, together with the association between women and motherly warmth has led to them being viewed in a generally positive, yet ambivalent way. As a result,

both men and women exhibit a greater inclination to trust and engage with women, with female companionship preferences extending to physical proximity, touching and sharing personal information (Riess & Salzer, 1981; Major et al., 1990; Cozby, 1973). In particular, women exhibit a significantly stronger in-group bias compared to men, meaning women strongly prefer other women (Rudman & Goodwin, 2004).

While stereotypes commonly portray women as gentle, warm, and kind (Rosenkrantz et al., 1968), those attributed to black individuals often reflect the opposite traits. There is no concept of 'benevolent racism', as racist beliefs towards black people are overwhelmingly negative and perpetuate the separation of blacks from whites, characterizing them as lazy, aggressive, unruly and loud (Smedley & Bayton, 1978; Peffley & Hurwitz, 1998). As highlighted in the previous section on implicit bias, societal norms have shifted away from openly endorsing prejudiced remarks. Many now outright reject or simply refrain from expressing such views. However, findings from the 1991 Race and Politics Survey reveal that despite widespread rejection of negative characterizations of black individuals, there is still a significant portion of the population that holds these harmful stereotypes. Peffley and Hurwitz (1998) find that between one third and half of the white population attribute traits such as "lazy" and "violent" to black individuals. Given the societal tendency to conceal overtly racist sentiments, the prevalence of these beliefs among a sizable percentage of the population is concerning.

It is also widely recognised that racism and sexism do not exist in a vacuum, but are interrelated and interact with other forms of discrimination, such as those based on class, sexual orientation or disability. Intersectionality acknowledges that an individual may face multiple layers of discrimination based on different aspects of their identity - for example, racism may manifest itself differently when it affects a black man than when it affects a black woman, just as sexism is experienced differently by white and black women. This feeling has been widely expressed by black feminists, who have reported that their experience of racism has been significantly altered by the fact that they are women, and that the views expressed by white feminists often do not apply to, or do not adequately address, the forms of sexism that black women experience (Smith & Steward, 1983). Black women are therefore affected by two different sets of beliefs: white people's beliefs about black people and men's beliefs about women. This means that many of the

favorable stereotypes afforded to white women are not extended to black women; if white women are seen as kind, gentle and chaste, black women are unfairly stereotyped as angry, illogical and their bodies often over-sexualised.

The social relationships between white men and minority groups, specifically white women and black people, are significant factors in shaping how these groups experience discrimination. Social and geographical segregation of black people can limit meaningful interactions between different racial groups, whereas men and women have frequent contact in social, work and family settings. The differences between sexism and racism can therefore be partly explained in terms of the contact hypothesis: direct personal interactions with people from different social groups can reduce prejudice, discrimination, and intergroup conflict, as well as promote more positive behavior and attitudes (Pettigrew et al., 2011). Research has found that cooperative tasks lead to greater out-group liking (Johnson et al., 1981), even when the intergroup cooperation is simply imagined (Kuchenbrandt et al., 2013). Since the nature of racism can lead to less frequent, superficial or even conflictual interactions between groups, it can negatively affect the ability to self-other merge with someone of a different race, leading to reduced feelings of empathy.

Sexism and racism, as well as the contact hypothesis, provide insight into the behaviors that affect minority groups. However, minority groups also have their own perceptions of majority groups - for example, as noted above, women tend to have a strong ingroup bias. In terms of racial attitudes, research has mainly focused on how contact with minority groups reduces negative prejudice among whites (see Tropp, 2006, for a review). Nonetheless, there's a growing body of literature exploring how racial minorities perceive and interact with whites.

Research has shown that minorities' attitudes towards white people largely stem from their experiences with racism and discrimination (Monteith & Spicer, 2000). Their views on white people are largely shaped by their beliefs about how they think white people view ethnic minorities – for example, research has shown that a contributing factor to black people's racial attitudes is their perception of how white people interact with and treat black people. For example, a person from a racial minority group who has experienced discrimination at the hands of white people in the past is likely to have reservations about them. This in turn leads to

avoidance, limited contact and fewer friendships with white people (Patchen, 1983; Brigham, 1993; Johnson & Lecci, 2003).

Still, according to contact theory, because ethnic minorities are regularly exposed to white people both in everyday interactions and in the media, even those who hold negative attitudes towards whites may have developed ways of living together. Research on interactions between stigmatized and non-stigmatized individuals has shown that stigmatized individuals often engage in compensatory strategies in order to prioritize positive experiences for the non-stigmatized person, even at their own expense (Miller & Meyers, 1998). As a result, white people may misinterpret their interactions with ethnic minorities and perhaps mistakenly exaggerate how they think minority groups feel about them – thus affecting their third order beliefs.

3 Research Questions & Hypotheses

3.1 Research Questions

Taking the above insights from prior literature into consideration, we formulate the following research questions:

i. Are elicited first, second and third order beliefs consistent with each other?

ii. Do high order beliefs change when asked to imagine a person, compared to being shown actual pictures of people?

iii. Do high order beliefs vary depending on the race and gender of the people shown?

3.2 Hypotheses

Research suggests that people have different perceptions of themselves than they do of others. This is due to the nature of sensory processing, which makes it so that people judge themselves based on their thoughts and intentions, while they judge others based on their outward actions. Because of this, mentally healthy individuals often show a tendency to overestimate their positive attributes in comparison to others. However, people with mental health problems may instead perceive themselves as inferior to others. Regardless of whether individuals overvalue or undervalue themselves relative to others, prior research leads us to expect that first order and second order beliefs will not be consistent with each other.
Furthermore, research on the topic of metaperception has found that people’s beliefs about how others see them tend to be more in line with their own perceptions of themselves, rather than the actual beliefs that others have of them. So, if metaperception depends entirely on people's own perceptions of themselves, third order beliefs and second order beliefs should be inconsistent.

Still, most research on metaperception focuses on the difference between what people believe others think of them, and what others actually think of them; it shows a clear misperception of

others' beliefs, and points to the fact that third order beliefs are constructed through introspection, and do not depend on outside stimuli. This means, however, that the research comparing our perceptions of ourselves (first order beliefs) and how we believe others perceive us (third order beliefs) is limited, if not nonexistent. The two concepts are similar, in that they are both constructed exclusively through the process of introspection, and they ultimately reflect the vision we have of ourselves; however, they are not the same. The first concept requires people to reflect on themselves and how they see their own existence as someone who is constantly inside their own heads, immersed in their thoughts, feelings and life experiences. The second one requires you to take a step back, and look at yourself through someone else's eyes – albeit, that someone else is still you. This could indicate that there very well may be a difference between first order and third order beliefs. Perhaps third order beliefs, or seeing yourself through others' eyes, prompts a deeper level of self awareness that could represent what people really believe about themselves, without cognitive biases influencing their judgment. You become the observer, and judge a projection of yourself as if you were someone else. Regardless, due to the lack of research and experimental evidence on this topic, it is only possible to speculate. Ultimately, we assume that the difference in mental process will lead to significant differences in first and third order beliefs, even if they are two facets of self-perception.

Based on the above considerations, we can formulate the first hypothesis:

H1: First, second, and third order beliefs are not consistent with each other.

As explored in the literature section, seeing a picture of someone allows others to have a visual connection with the person being portrayed. It allows them to better incorporate the target into their own sense of self through the process of self-other merging, thus fostering a stronger emotional connection, increasing empathy and potentially leading to higher valuations, and making it easier to imagine being liked by them. In addition, being shown a picture of a person could lead to an increased sense of social perception. This sense of being watched could lead to more prosocial behavior and dissuade antisocial behavior, in turn leading to higher valuations when pictures of people are shown.

In contrast, imagining a generic person may result in a mental representation that is highly abstract, making it difficult to relate to, and may not evoke the same level of connection and empathy as viewing an actual picture. Based on this, we can formulate a second hypothesis:

H2: Being shown a picture of someone will have a positive effect on second and third order beliefs.

In considering differences in higher-order beliefs within the image scenario, benevolent sexism coupled with generally favorable attitudes towards women leads to the expectation of higher second and possibly third order beliefs associated with images depicting women. Conversely, the presence of racial bias leads to the expectation of lower second order beliefs for images depicting black people. It should be noted, however, that people have been found to compensate by evaluating black people more favorably in an effort to mitigate perceived prejudice (Vanman et al., 1997). Therefore, results may vary. The hypothesis proposed for this study is as follows: given that the majority of the sample consists of Western individuals, who are more conscious of politically correct sentiments, it is expected that ratings will be higher for images of black people, as a method of self-reporting as unbiased. However, because the favorable stereotypes of white women are often not reflected on black women, we still expect white women to be valued more highly than they are. That leads us to the third hypothesis:
H3: Second order beliefs will be higher for pictures of women rather than for pictures of men, and for pictures of black people rather than for pictures of white people. When the intersection between gender and race is considered, white women will still be valued more highly than black women.

There is a lack of research investigating metaperception through images, and thus examining whether it varies based on the race or gender of the person that is the target of the metaperception. As previously mentioned, metaperception largely hinges on individuals' self-perceptions. However, when presented with a photograph, metaperception is likely influenced not only by how individuals perceive themselves but also by how they perceive others and whether they believe the other person is someone who would value them.

In the case of photographs depicting women, stereotypical portrayals of women as nurturing and gentle may lead individuals to believe that women value them more than men do. Furthermore, the tendency people have to prefer female presence and contact due to perceived traits of openness and warmth could result in higher third order beliefs towards women; due to the

different stereotypes commonly attributed between white and black women, this effect will be stronger when the photo depicts the former.

Predicting outcomes becomes more complex when considering racial factors. White individuals may anticipate that black individuals value them less if they believe them to have experienced racism from a white person, with the decrease in third order beliefs being a response to underlying racial attitudes. However, compensatory behaviors often adopted by minority groups may mitigate this expectation. Conversely, black individuals may anticipate that white individuals value them less. Nonetheless, these beliefs are likely influenced by contact theory, where increased quality contact with individuals from other races tends to equalize third order beliefs evoked by both white and black photographs. From this we can formulate the final hypothesis:

H4: Third order beliefs will be higher for pictures of women rather than for pictures of men, and for pictures of black people rather than for pictures of white people. When the intersection between gender and race is considered, white women will still lead to higher third order beliefs than black women.

4 Methodology

4.1 Survey Design

Beliefs are elicited by asking respondents direct questions in the form of a survey. An external incentive towards participation is provided through a gift card raffle among participants. The survey begins with some basic demographic questions regarding the respondent's age, gender, race, sexuality, educational level and income. The treatment section is divided into three main sections based on the type of ordered belief being investigated; these sections are presented in the same order for every respondent, with beliefs regarding self-worth being first, followed by high order beliefs without pictures and concluding with high order beliefs with pictures. The sections are as follows:

i. Eliciting beliefs on self-worth

Respondents are asked the following question: "*On a scale from 1 to 10, how much do you value yourself as a person?*", with the possibility to select a number from 1 to 10, with 1 being labeled "*I do not value myself at all*" and 10 being labeled as "*I value myself highly*".

ii. Eliciting high order beliefs, without pictures

Respondents are asked to imagine a generic man. Second order beliefs will be elicited asking "*how much do you value this person?*", with the ability to select a number from 1 to 10, with 1 being labeled "*I value this person lowly*" and 10 being labeled as "*I value this person highly*". This question will then be repeated asking the respondent to imagine a generic woman.

Third order beliefs are then elicited by asking "*how much do you think this person values you?*", with the ability to select a number from 1 to 10 from a scale, with 1 being labeled "*I think this person values me lowly*" and 10 being labeled as "*I think this person values me highly*". This question is also repeated, instead asking the respondent to imagine a generic woman.

iii. Eliciting high order beliefs, with pictures

Participants are shown a series of photos of 8 people, a dog and a cat. The pictures are presented to all participants in a random order. The pictures show two white men, two white women, two

black men and two black women, with one being elderly and one young. The photos used for the survey are royalty-free and taken from Pexels. All photos show middle class, western people with similar smiling expressions, to minimize differences that could be caused from neutral expressions. The photos used for this research can be found in the Appendix.

Second order beliefs are elicited by asking "*how much do you value this person?*", with the ability to select a number from 1 to 10, with 1 being labeled "*I value this person lowly*" and 10 being labeled as "*I value this person highly*".
Third order beliefs are similarly elicited using a question such as "*how much do you think this person values you?*", with the ability to select a number from 1 to 10 from a scale, with 1 being labeled "*I think this person values me lowly*" and 10 being labeled as "*I think this person values me highly*".

Questions **ii** and **iii** allow us to analyze whether people's perceptions of a person's worth change depending on whether they imagine or see a picture of that person. Furthermore, any differences in the ratings given in question **iii** may indicate discriminatory attitudes among respondents.

4.2 Data Analysis

All three sections of the survey (treatment) will be completed by each participant. This within subject design allows for an analysis to be conducted with fewer observations, and will result in less noise in the collected data.
For clarity, the analysis will be divided into three sections per each research question:

RQ i. Are elicited first, second and third order beliefs consistent with each other?

The first part of the analysis is performed using a nonparametric test, the Wilcoxon signed-rank test, which assumes non-normally distributed data. However, in situations where the sample size is sufficiently large (typically $N > 40$), a parametric test can perform well with non-normally distributed data. Since the sample size satisfies this condition, a paired t-test is also used.

This analysis focuses on the following comparisons: first, first order and second order beliefs are compared to determine whether individuals value themselves or others more. Second, a comparison of first and third order beliefs determines whether individuals value themselves as much as they think others will value them, which may be a reflection of the individual's true self-worth. Finally, by comparing second and third order beliefs, this study examines whether individuals place the same value on others as they perceive others to place upon them.

> **RQ ii.** Do high order beliefs change when asked to imagine a person, compared to being shown actual pictures of people?

To compare the personal belief scores given by respondents with and without a picture shown, we conducted a series of fixed-effect linear regressions. This controls for individual-specific effects (a_i) that remain constant over time and, therefore, addresses issues of unobserved heterogeneity.

Second and third order beliefs are regressed on the dummy variables *picture* (1 = picture shown, 0 = no picture shown) and *gender* (1 = female, 0 = male).

$$(1)\ SecondOrder_{i,r} = a_i + \beta_1 Picture_{i,r} + \beta_2 Gender_{i,r} + \mu_i$$
$$(2)\ ThirdOrder_i = a_i + \beta_1 Picture_{i,r} + \beta_2 Gender_{i,r} + \mu_i$$

Regressions (1) and (2) are complemented by an additional set of regression specifications that takes into account the heterogeneity of the treatment effect. This adjustment accounts for any variation that may occur due to the pictured person's gender. To account for this potential variability, we include an interaction term in the regressions through the following moderation analysis':

$$(3)\ SecondOrder_i = a_i + \beta_1 Picture_{i,r} + \beta_2 Gender_{i,r} + \beta_3 Picture_{i,r} * Gender_{i,r} + \mu_i$$
$$(4) ThirdOrder_i = a_i + \beta_1 Picture_{i,r} + \beta_2 Gender_{i,r} + \beta_3 Picture_{i,r} * Gender_{i,r} + \mu_i$$

To better analyze the impact of the respondent's gender on their choices, the regressions will be run three times each: once with the data for only male respondents, then for only female respondents, and then with the full combined dataset.

RQ iii. Do high order beliefs vary depending on the race and gender of the people shown?

A similar approach as the one used in the previous section applied: second and third order beliefs are regressed on the dummy variables *gender* (1 = female, 0 = male) and *race* (1 = black, 0 = white).

$$(5)\ SecondOrder_i = a_i + \beta_1 Gender_{i,r} + \beta_2 Race_{i,r} + \mu_i$$
$$(6)\ ThirdOrder_i = a_i + \beta_1 Gender_{i,r} + \beta_2 Race_{i,r} + \mu_i$$

While these regressions are a good start to the analysis and give us important information about the respondent's attitudes towards minority groups, they still do not take into account the intersectional nature of discrimination. Discriminatory attitudes towards people who belong to multiple minority groups cannot be fully understood by examining each factor in isolation. The addition of an interaction term is a way of taking this into account:

$$(7)\ SecondOrder_i = a_i + \beta_1 Gender_{i,r} + \beta_2 Race_{i,r} + \beta_3 Gender_{i,r} * Race_{i,r} + \mu_i$$
$$(8)\ ThirdOrder_i = a_i + \beta_1 Gender_{i,r} + \beta_2 Race_{i,r} + \beta_3 Gender_{i,r} * Race_{i,r} + \mu_i$$

The regressions will be run with the full dataset as well as four different subsamples: male respondents only, female respondents only, white respondents only, and non-white respondents only.

5 Results

5.1 Data & Descriptive Analysis

The survey received a total of 247 valid responses. Summary statistics for the collected data are presented in Table 1. The sample shows respondents were mostly men (48.2%) and white/caucasian (69.2%), with the largest racial minorities being black/african american (12.1%) and hispanic/latin american (8.9%). Most of the respondents are between 18 to 24 (41.7%) and 25 to 44 (44.5%) years of age, with only one being under 18, and 33 respondents over 45 (13.3%). 65.2% of those surveyed identified as heterosexual, while the remaining respondents identified with a different sexuality. The largest group among queer respondents was bisexual, comprising 23.5% of the sample. Educational levels show most having completed some degree of upper education, and a significant subsample which only completed high school (27.9%). Finally, the reported annual income is quite varied, with the highest proportion of respondents earning less than $20,000 (25.5%). This question had the highest number of abstentions (14.2%).

Table 1. Summary Statistics of Respondent Demographic

	(1)	(2)
Variable	Number of observations (*N = 247*)	Proportion
Gender		
Female	98	39.7%
Male	119	48.2%
Nonbinary/Genderqueer	27	10.9%
Other/Prefer not to say	3	1.2%
Race		
White/Caucasian	171	69.2%
Black/African American	30	12.1%
Hispanic/Latin American	22	8.9%
Middle Eastern/North African	4	1.6%
Asian	13	5.3%
Native American	1	0.4%
Other/Prefer to self describe	6	2.4%

Age		
Under 18 years old	1	0.4%
18 - 24 years old	103	41.7%
25 - 44 years old	110	44.5%
45 - 64 years old	27	10.9%
65+ years old	6	2.4%
Sexuality		
Heterosexual	161	65.2%
Homosexual	17	6.9%
Bisexual	58	23.5%
Asexual	6	2.4%
Other/Prefer not to say	5	2.0%
Education		
High School	69	27.9%
College degree/Vocational education	38	15.4%
Bachelor's degree	72	29.1%
Master's degree	54	21.9%
Doctorate degree	10	4.0%
Prefer not to say	4	1.6%
Yearly income (after tax)		
Under $20,000	63	25.5%
$20,001 – $40,000	37	15.0%
$40,001 – $60,000	36	14.6%
$60,001 – $80,000	34	13.8%
$80,001 – $100,000	20	8.1%
$100,001 or over	22	8.9%
Prefer not to say	35	14.2%

Table 2 presents summary statistics for beliefs. The sample shows relatively high self esteem, as evidenced by the highest average score of 6.9 for first order beliefs. The average self esteem of female respondents (7.3) in our sample appears to be slightly higher than the self esteem of the male ones (7) – the statistical significance of this difference will be further analyzed in the upcoming section. Both male and female respondents have an average score higher than the overall average. This is due to the fact that low first order belief scores of nonbinary respondents, with an average score of 5.1, bring down the collective average.

Table 2. Summary Statistics of High Order Beliefs

	Belief Type	Mean	Std. Dev.	Min	Pctl. 25	Pctl. 75	Max
All respondents	First Order	**6.9**	2	0	6	8	10
Only male	First Order	**7**	2.0	2	6	8	10
Only female	First Order	**7.3**	1.8	1	6	8	10
Without Picture							
Male	Second Order	**6.3**	1.9	0	5	8	10
	Third Order	**5.5**	2.4	0	4	7	10
Female	Second Order	**6.9**	1.8	0	5	8	10
	Third Order	**6**	2.3	0	5	8	10
With Picture							
Young White Male	Second Order	**6.3**	2	0	6	8	10
	Third Order	**5.6**	2.6	0	4	8	10
Old White Male	Second Order	**6.3**	1.9	0	5	8	10
	Third Order	**5.9**	2.5	0	4	7.5	10
Young White Female	Second Order	**6.7**	1.8	0	5	8	10
	Third Order	**6.1**	2.4	0	5	8	10
Old White Female	Second Order	**6.9**	1.9	0	6	8	10
	Third Order	**6.4**	2.4	0	5	8	10
Young Black Male	Second Order	**6.4**	1.9	0	5	8	10
	Third Order	**6**	2.4	0	5	8	10
Old Black Male	Second Order	**6.6**	2.1	0	5	8	10
	Third Order	**6.5**	2.3	0	5	8	10
Young Black Female	Second Order	**6.5**	2.1	0	5	8	10
	Third Order	**6**	2.4	0	5	8	10
Old Black Female	Second Order	**6.8**	2	0	5	8	10
	Third Order	**6.5**	2.2	0	5	8	10

Average second order beliefs towards men are higher when a picture is shown, reaching values that are either the same as or higher than the no-picture condition. The opposite is observed for women: the average second order beliefs either remain the same or decrease when a picture is shown, compared to situations without pictures. In general, both in scenarios with and without pictures, average second order beliefs are higher when the target is a woman.

Third order beliefs are lower when no picture is shown. On average, third order beliefs are lowest when the target is a white man. The results indicate that third order beliefs, with a collective average of 6.05, are consistently lower than first and second order beliefs, with collective means of 6.9 and 6.57 respectively. This suggests that our sample tends to perceive the worth attributed to them by others as lower both than the worth they attribute to themselves, and the worth they attribute to others. These findings are consistent with prior research on the topic (Flores Almeyda, 2023). However, compared to Flores Almeyda's research our sample exhibits lower average belief scores across all categories, by approximately one full point.

Figure 1. Aggregate First Order Beliefs Plot

Figure 2. Aggregate Second Order Beliefs Plot

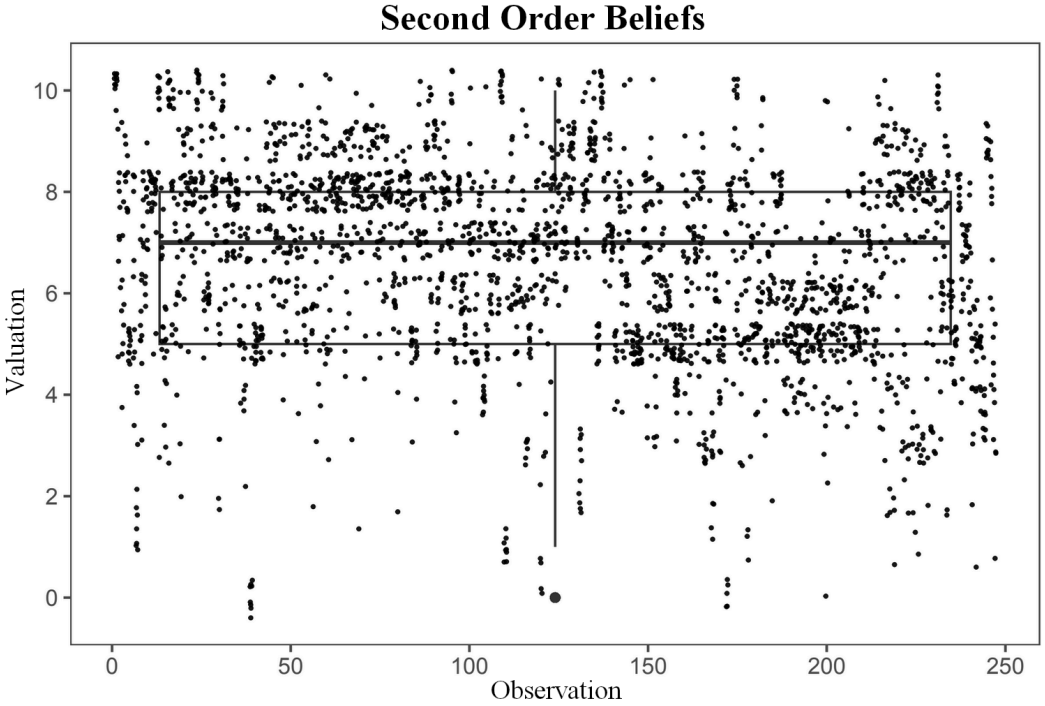


Figure 3. Aggregate Third Order Beliefs Plot

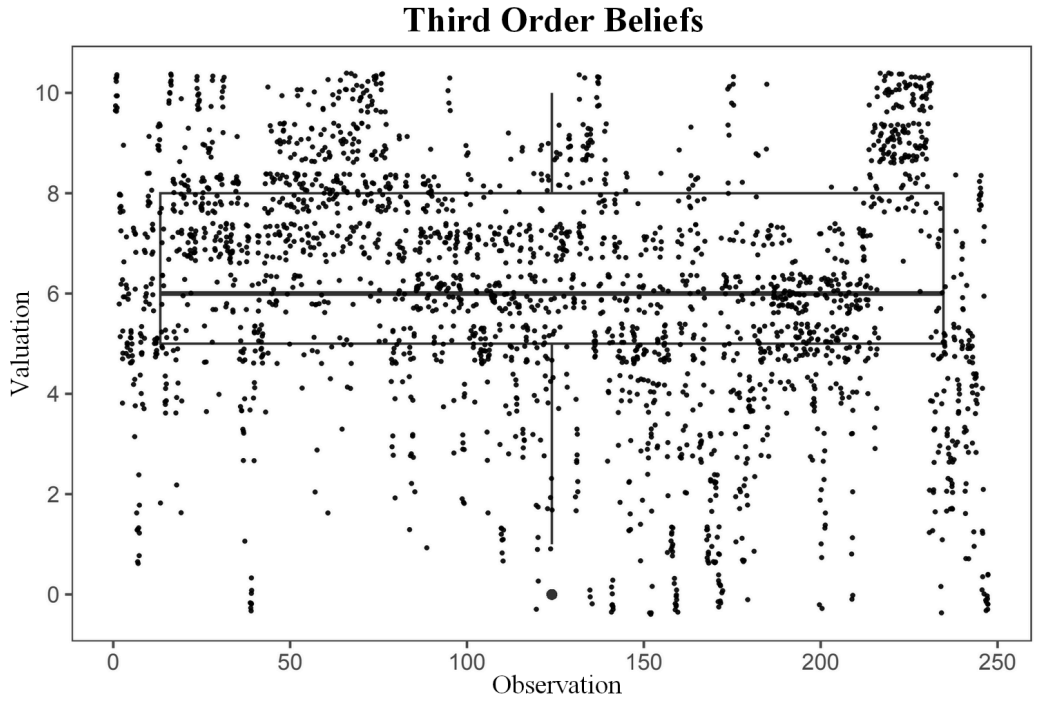


Figure 4. Second Order Beliefs Plot

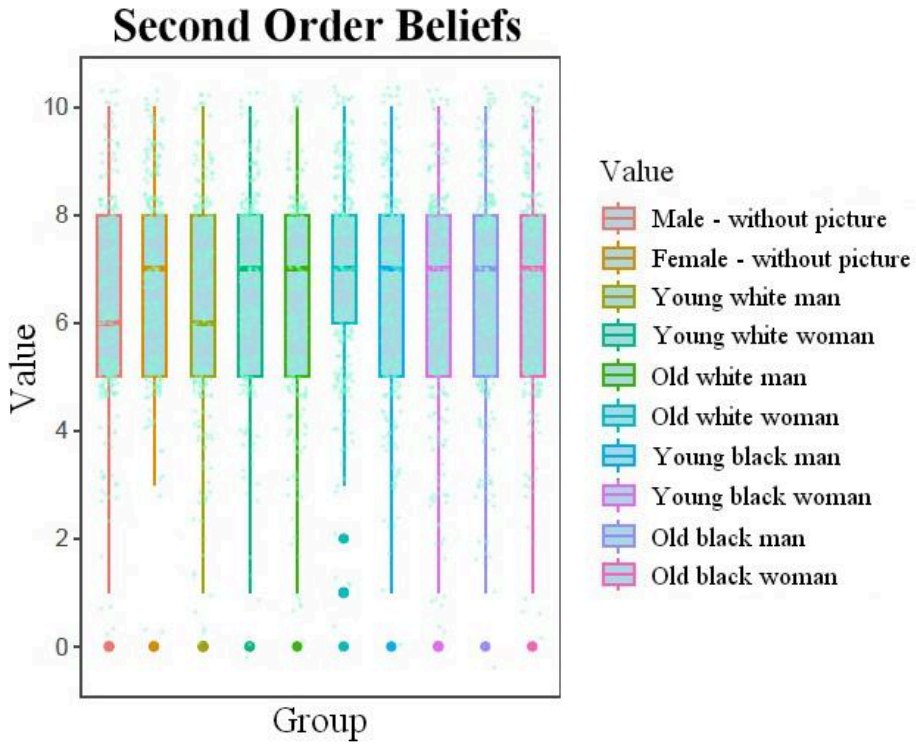
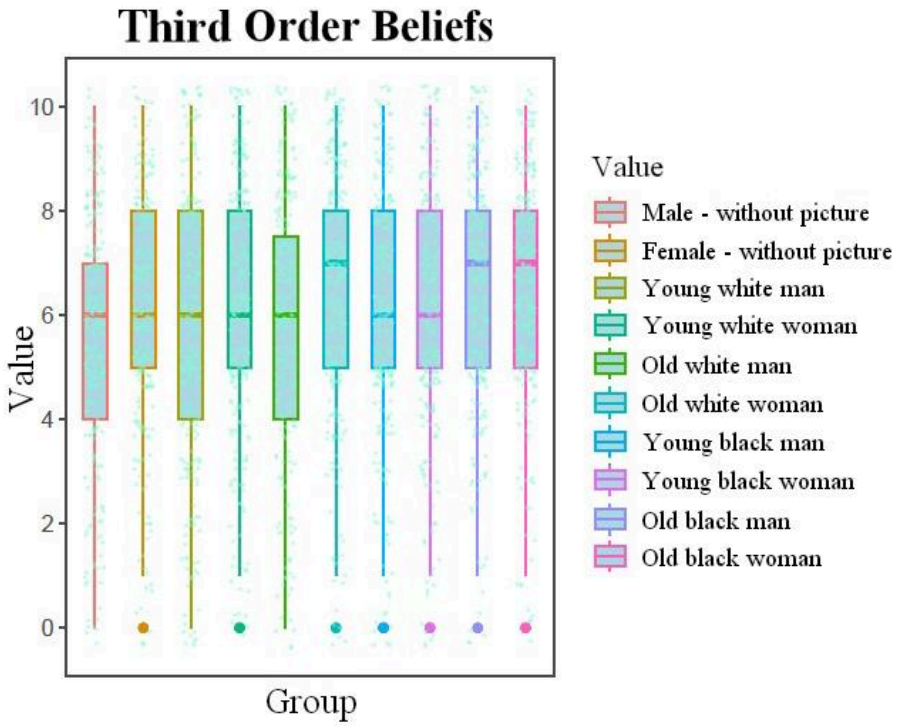


Figure 5. Third Order Beliefs Plot



5.2 Belief Consistency & Demographic Influences

Table 2 displays a degree of mismatch between first, second, and third order beliefs. This is further supported by the results of the Wilcoxon Signed-ranks test and pairwise t-test, which are presented in Table 3.

Table 3. Results from Wilcoxon Signed-Rank test & pairwise t-test

Paired Observations		p-value (*Wilcoxon*)	Null hypothesis	p-value (*pairwise t-test*)	Null hypothesis
First & Second Order	Without pictures	0.02586	Reject	0.02796	Reject
	With pictures	0.008641	Reject	0.02211	Reject
First & Third Order	Without pictures	$2.601e^{-16}$	Reject	$4.401e^{-16}$	Reject
	With pictures	$9.06e^{-08}$	Reject	$1.199e^{-08}$	Reject
Second & Third Order	Without pictures	$4.124e^{-14}$	Reject	$3.448e^{-15}$	Reject
	With pictures	$1.245e^{-07}$	Reject	$2.632e^{-05}$	Reject

The comparison of first and second order beliefs leads to the rejection of the null hypothesis in both situations with a high degree of confidence ($p < 0.05$), indicating that the self-perception of individuals differ significantly from their perception of others. Similarly, when comparing first and third order beliefs, the null hypothesis is rejected in both the scenarios with and without pictures. This suggests that there is a statistically significant ($p < 0.01$) mismatch between how individuals perceive themselves and how they perceive others to perceive them. The same holds true when examining the mismatch between second and third order beliefs, highlighting a statistically significant discrepancy between the importance individuals attribute to others and their perceptions of how much others value them. These results support the findings in section 4.1 that first order beliefs are highest, followed by second order beliefs, and third order beliefs are lowest. The findings are consistent both when using the Wilcoxon signed rank test, and when using the pairwise t-test. These results align with prior research (Flores Almeyda, 2023).

An OLS regression model is used to examine the relationship between demographic characteristics and high-order beliefs. Standard errors are clustered at the individual level.

No significant difference in first and third order beliefs between male and female respondents was found, indicating that while women were found to have higher average self-esteem values compared to men, the finding is not statistically significant. There is a significant increase in second order beliefs held by women compared to men, indicating that women tend to see others more favorably. Nonbinary individuals in the sample exhibited lower first and third order beliefs – a decrease of 12.11% and 9.67% respectively. The same effect is seen for people who identified with a sexuality other than heterosexual, adding evidence to the potential correlation between being part of the LGBT+ community and experiencing self-esteem issues. Even in second order beliefs, LGBT+ respondents' valuations are lower than those of men and heterosexual respondents.

All high order beliefs scores showed a significant decrease among members of racial minorities, suggesting that they may have lower self-esteem and value others less. Respondents aged over 25 exhibited significantly lower first and second order beliefs compared to those under 25, with a decrease of 57.9% and 34.7% respectively. This finding is noteworthy in the light of the research carried out by Flores Almeyda (2023), as it presents a contrasting result. Moreover, individuals who completed some degree of higher education exhibited higher first, second, and third order beliefs compared to those who had not completed any form of higher education, indicating a statistically significant correlation between advanced education and more positive attitudes toward oneself and others. Lastly, higher income was associated with increased first and third order beliefs, suggesting a positive correlation between income level and self esteem.

Table 4. Demographic Determinants of Beliefs

	Dependent Variable		
	(1) First Order	(2) Second Order	(3) Third Order
Gender: Female	0.190	0.227***	0.039
	(0.247)	(0.083)	(0.090)
Gender: Nonbinary	-1.211**	-0.464***	-0.967***
	(0.432)	(0.145)	(0.158)
Race	-0.678***	-0.732***	-0.956***
	(0.255)	(0.085)	(0.093)
Age	-0.579**	-0.347***	0.009
	(0.250)	(0.084)	(0.091)
Education	0.994***	0.565***	1.006***
	(0.276)	(0.092)	(0.101)
Sexuality	-0.640**	-0.256***	-0.976***
	(0.289)	(0.096)	(0.105)
Income	0.852***	-0.006	0.812***
	(0.275)	(0.092)	(0.100)
Constant	6.641***	6.596***	5.814***
	(0.335)	(0.112)	(0.122)
Observations	247	2,470	2,470
R^2	0.279	0.086	0.269
Adjusted R^2	0.242	0.081	0.266
Residual Std. Error	1.781 (df = 234)	1.883 (df = 2457)	2.055 (df = 2457)
F Statistic	7.537*** (df = 12; 234)	19.164*** (df = 12; 2457)	75.390*** (df = 12; 2457)

*Note: *p<0.1; **p<0.05; ***p<0.01*

This table presents regression results for first order (column (1)), second order (column (2)), and third order (column (3)) beliefs. Except for gender, all demographic data use dummy descriptors as follows: race: 0 = white, 1 = non white; age: 0 = under 25, 1 = over 25 (the same division in maturity groups as Flores Almeyda (2023) is used), education: 0 = no secondary education attained, 1 = secondary education attained, income: 0 = under $60,000, 1 = over $60,000.

5.3 Comparing Beliefs in No Picture vs. Picture Scenarios

Tables 5 and 6 illustrate the impact of displaying pictures on second and third order beliefs, highlighting distinctions between when the imagined or pictured target is male or female.

Table 5. Effect of Picture & Gender on Beliefs

	Dependent Variable	
	(1) Second Order	(2) Third Order
Picture	-0.021	0.363***
	(0.099)	(0.093)
Gender	0.375***	0.321***
	(0.045)	(0.054)
Observations	2,470	2,470
R^2	0.588	0.732
Adjusted R^2	0.542	0.702
Residual Std. Error (df = 2221)	1.330	1.309

*Note: *p<0.1; **p<0.05; ***p<0.01*

The results shown in Table 4 show that the effect of being shown a picture enhances third order beliefs by 36.3%, indicating that individuals in our sample feel more valued when the target is visualized. However, there is no significant effect observed for second order beliefs. Notably, when the target is female, both second and third order beliefs experience a significant increase (37.5% and 32.1%, respectively). This suggests that respondents attribute higher value to and feel more valued by women compared to men.

Table 6 shows the results with the interaction effect. Specifications (1) and (2) show the results when the regression is run on the full sample. There is still no significant effect of being shown a picture on second order beliefs. The results are consistent with the overall averages shown in Table 2. Specifically, while there is generally a higher second order valuation of men when they are in a picture compared to when they are not, this is countered by lower second order beliefs when women are in a picture compared to when they are not. Regardless, second order beliefs

are 62.8% higher for women than for men. This effect is significant and positive in both situations, with and without pictures; however, in the former situation, the effect is smaller.

The results indicate higher second order beliefs towards women both when no picture is shown and when a picture is shown. However, the positive effect is less strong in the latter situation. The results for third order beliefs show that our sample feels more valued by women and by the people they see the picture of. Despite the negative interaction term, the increase in third order beliefs is still highest when a picture of a woman is shown, with a net increase of 75.5%.

Table 6. Effect of Picture & Gender on Beliefs - with Moderator Analysis

	Dependent Variable					
	Full Sample		Only Male		Only Female	
	(1) Second Order	(2) Third Order	(3) Second Order	(4) Third Order	(5) Second Order	(6) Third Order
Picture	0.137	0.482***	0.061	0.376***	0.158	0.594***
	(0.116)	(0.108)	(0.144)	(0.132)	(0.225)	(0.199)
Gender	0.628***	0.510***	0.403***	0.176	0.806***	0.827***
	(0.080)	(0.098)	(0.104)	(0.125)	(0.140)	(0.168)
Picture*Gender	-0.316***	-0.237**	-0.231*	-0.107	-0.462***	-0.411**
	(0.083)	(0.097)	(0.119)	(0.137)	(0.140)	(0.171)
Observations	2,470	2,470	1,190	1,190	980	980
R^2	0.589	0.732	0.570	0.759	0.591	0.674
Adjusted R^2	0.543	0.702	0.521	0.731	0.544	0.637
Residual Std. Error	1.328 (df = 2220)	1.308 (df = 2220)	1.294 (df = 1068)	1.176 (df = 1068)	1.385 (df = 879)	1.368 (df = 879)

*Note: *p<0.1; **p<0.05; ***p<0.01*

Specifications (3) and (4) show the results when the regression is run only with the data collected from male respondents. Similarly to the results run with the whole sample, there is no significant effect of being shown a picture on second order beliefs. Women are valued more highly than men both when a picture is present, and when it isn't. There is a positive correlation between third order beliefs and being shown a picture, with a 37.6% increase in valuations. However, there is no significant effect of gender and interaction term, indicating that men may have uniformly higher perceived valuations by picture irrespective of gender.

Finally, specifications (5) and (6) show the results when the regression is run only with the data collected from female respondents. In this situation, there is still no significant effect of being shown a picture on second order beliefs. On the other hand, the effect is positive and significant for third order beliefs, with an increase of 59.4%. This means that, for women within our sample, being shown a picture or someone does not affect what they think of that person; however, women feel significantly more valued by someone when they can see them. Women have a much higher valuation of women relative to men, and it remains estimated to be positive even when there is a picture (80.6% - 46.2% = 34.4%, total effect is still positive). Women feel significantly more valued by women than by men. This effect is still positive when there is a picture, although less strong (80.7% - 41.1% = 39.6%).

5.4 Comparing Differences in Picture-Elicited Beliefs Based on Gender & Race

The following section examines how the gender and race of individuals depicted in pictures can influence beliefs. Tables 7 and 8 employ fixed effects linear model regression on the entire sample, with and without the interaction effect between gender and race. Table 9 shows the results of the regression conducted with the interaction effect on various subsamples.

Table 7. Effect of Visualizing Gender & Race on Beliefs

	Dependent Variable	
	(1) Second Order	(2) Third Order
Gender	0.312*** (0.047)	0.273*** (0.055)
Race	0.008 (0.094)	0.251*** (0.067)
Observations	1,976	1,976
R^2	0.646	0.771
Adjusted R^2	0.595	0.738
Residual Std. Error (df = 1727)	1.266	1.234

*Note: *p<0.1; **p<0.05; ***p<0.01*

Table 7 shows a positive impact of gender both on second and third order beliefs: our sample tends to give higher valuations to women rather than men, and in turn also feel valued by women more. This is consistent with the average values shown in Table 2. There is no significant impact of race on second order beliefs; there is, however, a significant positive effect on third order beliefs. This suggests that people feel more valued when the target is black, but do not necessarily value them more in turn.

Table 8. Effect of Visualizing Gender & Race on Beliefs - with Interaction Effect

	Dependent Variable	
	(1) Second Order	(2) Third Order
Gender	0.508***	0.496***
	(0.061)	(0.077)
Race	0.204**	0.474***
	(0.096)	(0.084)
Gender*Race	-0.393***	-0.445***
	(0.069)	(0.091)
Observations	1,976	1,976
R^2	0.648	0.773
Adjusted R^2	0.597	0.740
Residual Std. Error (df = 1726)	1.262	1.229

*Note: *p<0.1; **p<0.05; ***p<0.01*

Table 8 shows that there is a positive correlation between second order beliefs and gender and race, with white women being the most highly valued and white men being the least highly valued. This is in line with the average scores reported in Table 2. Despite the negative and significant interaction term, black women are still valued higher than white men, as evidenced by the positive estimate (50.8% + 20.4% - 39.3% = 31.9%).

The same applies to third order beliefs. The data suggests that respondents feel more valued by all groups compared to white men. The estimates indicate an increase of approximately 50% in third order beliefs when the target is a white woman (49.6%), black man (47.4%), or black woman (52.5%).

Table 9. Effect of Visualizing Gender & Race on Beliefs - with Interaction Effect & Subsamples

	Dependent Variable							
	Only Male		Only Female		Only White		Only Non-White	
	(1) Second Order	(2) Third Order	(3) Second Order	(4) Third Order	(5) Second Order	(6) Third Order	(7) Second Order	(8) Third Order
Gender	0.277***	0.239**	0.643***	0.735***	0.518***	0.564***	0.487***	0.342**
	(0.086)	(0.106)	(0.087)	(0.119)	(0.070)	(0.094)	(0.120)	(0.135)
Race	-0.029	0.290**	0.214	0.485***	0.073	0.482***	0.500***	0.454***
	(0.134)	(0.111)	(0.159)	(0.142)	(0.124)	(0.102)	(0.137)	(0.151)
Gender*Race	-0.210*	-0.340***	-0.597***	-0.638***	-0.371***	-0.547***	-0.441***	-0.217
	(0.106)	(0.125)	(0.105)	(0.146)	(0.079)	(0.112)	(0.140)	(0.153)
Observations	952	952	784	784	1,368	1,368	608	608
R^2	0.591	0.779	0.706	0.746	0.625	0.785	0.670	0.716
Adjusted R^2	0.531	0.746	0.663	0.709	0.571	0.753	0.621	0.674
Residual Std. Error	1.289 (df = 830)	1.149 (df = 830)	1.212 (df = 683)	1.234 (df = 683)	1.243 (df = 1194)	1.198 (df = 1194)	1.296 (df = 529)	1.296 (df = 529)

*Note: *p<0.1; **p<0.05; ***p<0.01*

Table 9 shows the regression results for four different subsamples. Specifications (1) and (2) are for male respondents, while (3) and (4) are for female respondents. Similarly, (5) and (6) are for white respondents, and the last set, (7) and (8), is for non-white respondents. Due to the limited sample size of black and other racial minority respondents, they were combined into a single category.

Men from our sample value only white women more highly than white men. The positive effect of gender on second order beliefs of 27.7% is offset by the negative interaction effect, leading to only a 3.8% increase in valuation for black women. There is no significant effect for race outside of the interaction effect. Gender and race have a positive and statistically significant effect on third order beliefs, meaning that men feel valued more highly by all groups relative to white men. This is consistent with the results run with the whole sample.

Running the regression only with the female subsample shows similar results. White women are still valued the most, this time with a larger significant increase of 64.3%. The effect of race is only significant in conjunction with gender. Despite the negative interaction effect, there is still an increase in second order beliefs towards black women of around 26%, which is higher compared to the results found in the male only subsample. Third order beliefs are also positively correlated with gender and race, indicating that women feel valued more highly by all groups relative to white men. They feel valued the most by white women, with an increase in third order beliefs of 73.5% relative to white men.

The trend continues for the white-only sample. Compared to white men, this subset values white women 51.8% more, and black women 22% more. There is no statistically significant effect on second order beliefs towards black men. Again, white respondents feel valued the least by white men. The valuation increase is approximately the same for the three other groups: 56.4% when a white woman is pictured, 48.2% when a black man is pictured, and 49.9% when a black woman is pictured.

The non-white sample is the only one that shows a significant and positive relationship between race and second order beliefs. While all groups are still valued more than white men, this time black women are valued the highest, with an increase of 54.6% compared to white men. Black men and white women are valued around the same amount, with an increase in second order

beliefs compared to white men of 50% and 48.7% respectively. Third order beliefs show a 34.2% increase when a white woman is pictured, and 45.4% when a black man is. No statistically significant interaction effect leads to an increase in third order beliefs of 79.6% when a black woman is pictured, indicating that non-white respondents feel valued by them the most.

5.5 Robustness Test

The previous analyses were carried out using fixed effect linear model regressions. Linear regressions are straightforward and easy to interpret, and their ability to control for fixed individual respondent characteristics made them well suited to our analysis.
However, the analysis did not take into account some of the key assumptions of linear regression. A fixed effects linear model assumes continuous data, whereas the dependent variable in my study takes discrete values between 0 and 10, forming an ordered but non-continuous scale. Furthermore, the data is inherently categorical and discrete, and although ordered, intervals between values are not necessarily equal. Therefore, it is not appropriate to assume a normal distribution.

Logistic regression was used to address these issues. Unlike fixed effect linear models, logistic regressions are suitable for ordinal data sets such as the survey responses. Furthermore, logistic regressions do not assume a perfect linear relationship among the independent variables, a condition that is violated when using fixed effect linear models. Therefore, logistic regression is an appropriate method for carrying out a robustness test to assess whether it produces results that are consistent with the ones obtained using a fixed effect linear model.

Tables 10 and 11 correspond to Tables 5 and 6 in section 4.3 respectively, when a logistic regression is applied to the dataset as part of the robustness test.
Table 10 shows consistency and no loss of statistical significance with the results presented in Table 5, indicating that the fixed effect linear model regression is robust in this model specification. The coefficients share the same signs, and are just slightly larger in the logistic regression.

Table 10. Effect of Picture & Gender on Beliefs

	Dependent Variable	
	(1) Second Order	(2) Third Order
Picture	0.034 (0.094)	0.615*** (0.094)
Gender	0.570*** (0.074)	0.436*** (0.073)
Observations	2,470	2,470

*Note: *p<0.1; **p<0.05; ***p<0.01*

Table 11. Effect of Picture & Gender on Beliefs - with Moderator Analysis

	Dependent Variable					
	Full Sample		Only Male		Only Female	
	(1) Second Order	(2) Third Order	(3) Second Order	(4) Third Order	(5) Second Order	(6) Third Order
Picture	0.255* (0.133)	0.749*** (0.132)	0.153 (0.192)	0.632*** (0.192)	0.253 (0.215)	0.902*** (0.212)
Gender	0.920*** (0.168)	0.650*** (0.167)	0.639*** (0.239)	0.323 (0.242)	1.136*** (0.276)	0.993*** (0.270)
Picture*Gender	-0.432** (0.186)	-0.265 (0.186)	-0.368 (0.266)	-0.250 (0.269)	-0.549* (0.304)	-0.346 (0.298)
Observations	2,470	2,470	1,190	1,190	980	980

*Note: *p<0.1; **p<0.05; ***p<0.01*

On the other hand, Table 11 demonstrates greater changes in comparison to Table 6. When the regression is applied to the whole sample, there is now a significant positive relationship between second order beliefs and being presented with a picture. However, this increased significance is not observed when the analysis is carried out on subsamples. Across all specifications, there is a decline in the significance of the interaction term for both second and third order beliefs; the interaction effect ends up no longer being significant in all specifications except (1) and (5), while in Table 6 it was significant for all specifications except (4). The weaker or complete loss of statistical significance suggests that the differences in beliefs elicited with or without the use of pictures may be less robust than originally found. It is worth noting

that there is no change in the sign of the coefficients. However, these coefficients are consistently larger in the logistic model than in the linear model with fixed effects.

Tables 12, 13 and 14 correspond to the logit versions of the results in Tables 7, 8 and 9 in section 4.4 respectively.

Table 12. Effect of Visualizing Gender & Race on Beliefs

	Dependent Variable	
	(1) Second Order	(2) Third Order
Gender	0.492*** (0.083)	0.406*** (0.083)
Race	0.097 (0.083)	0.349*** (0.083)
Observations	1,976	1,976

*Note: *p<0.1; **p<0.05; ***p<0.01*

Table 13. Effect of Visualizing Gender & Race on Beliefs - with Interaction Effect

	Dependent Variable	
	(1) Second Order	(2) Third Order
Gender	0.768*** (0.118)	0.796*** (0.119)
Race	0.368*** (0.117)	0.739*** (0.118)
Gender*Race	-0.547*** (0.166)	-0.772*** (0.167)
Observations	1,976	1,976

*Note: *p<0.1; **p<0.05; ***p<0.01*

Table 12 shows results consistent with those of Table 7: there is no change in the statistical significance. The signs of the coefficients remain unchanged and there is a slight increase in their values.

Similarly, Table 13 shows results consistent with the original findings. The main difference is an increase in the statistical significance associated with the effect of race on second order beliefs. These results are evidence of the stability of the results in the use of logistic regression models, with minimal changes in statistical significance and no shift in the direction of the coefficients. These findings add to the robustness of the observed relationships across a range of model specifications.

Table 14 presents regression results for four distinct subsamples, mirroring the setup in Table 9. Results for male respondents are only included in specifications (1) and (2), while specifications (3) and (4) include results for female respondents only. Similarly, (5) and (6) are for white respondents and the final set, (7) and (8), are for non-white respondents.
Analyzing the male subsample exclusively reveals a decrease in the statistical significance of gender on second and third order beliefs. There is an increased significance of race on third order beliefs, coupled with a loss of significance in the interaction effect on both specifications (1) and (2), with it no longer significantly impacting second order beliefs. Results from the female subsample show minimal divergence from the fixed effect linear model. All aspects maintain consistent levels of statistical significance, with a now robustly statistically significant effect of race on second order beliefs, a notable change from its previous lack of significance.

Similar patterns emerge in the white subsample, with the primary difference being a now significant effect of race on second order beliefs. However, the increase in statistical power is less pronounced compared to the female-only subsample. Lastly, in the non-white subsample there is a decrease in statistical significance of the interaction effect on second order beliefs. Nevertheless, all specifications significant in the fixed effect linear model retain significance in this context, with an increased statistical significance of gender on third order beliefs.

Overall, these results closely resemble those in section 4.4. Most specifications remain significant or gain significance when employing logistic regression. Coefficients exhibit consistent signs, slightly larger in the logistic regression. These findings underscore the robustness of the fixed effect linear model regression in this model specification.

Table 14. Effect of Visualizing Gender & Race on Beliefs - with Interaction Effect & Subsamples

	Dependent Variable							
	Only Male		Only Female		Only White		Only Non-White	
	(1) Second Order	(2) Third Order	(3) Second Order	(4) Third Order	(5) Second Order	(6) Third Order	(7) Second Order	(8) Third Order
Gender	0.383**	0.327*	1.105***	1.300***	0.790***	0.906***	0.766***	0.588***
	(0.167)	(0.171)	(0.194)	(0.192)	(0.142)	(0.143)	(0.219)	(0.215)
Race	-0.029	0.453***	0.512***	0.802***	0.253*	0.779***	0.652***	0.653***
	(0.166)	(0.171)	(0.189)	(0.189)	(0.140)	(0.143)	(0.218)	(0.213)
Gender*Race	-0.245	-0.512**	-0.959***	-1.176***	-0.550***	-0.971***	-0.584*	-0.328
	(0.236)	(0.241)	(0.272)	(0.267)	(0.199)	(0.201)	(0.309)	(0.302)
Observations	952	952	784	784	1,368	1,368	608	608

*Note: *p<0.1; **p<0.05; ***p<0.01*

6 Discussion & Recommendations

6.1 Interpretation & Implications

Result 1: Belief consistency

The findings of this study support our initial hypothesis regarding the inconsistency of beliefs. First order beliefs, averaging 6.9, are notably higher than second order beliefs, which average 6.57. This difference is statistically significant and is consistent with previous research indicating that people tend to hold more positive views of themselves, influenced by cognitive biases such as unrealistic optimism. This suggests that a significant portion of our sample has a confident and healthy self-image.

Third order beliefs being lowest, with a collective average of 6.05, suggests that our sample perceives the value attributed to them by others to be lower than the value they attribute to themselves (first order beliefs) and to others (second order beliefs). This finding is particularly intriguing. If third order beliefs mirrored first order beliefs, it would indicate stable self-confidence, with individuals perceiving others' views of them to be consistent with their own self-perceptions. However, this is not the case; while participants generally hold positive self-views, as evidenced by the high first order beliefs, their third order beliefs reveal a level of insecurity when filtered through others' perspectives.

The analysis of demographic determinants of beliefs largely supports previous research findings. Nonbinary and non-heterosexual individuals exhibit decreased first and third order beliefs, consistent with the tendency for queer individuals to experience self-esteem issues. Higher levels of education and income both have positive effects on self-worth beliefs compared to those with lower education and income, and having a higher education level is also associated with higher valuations of others.

Being of a non-white race negatively affected self-worth beliefs. However, due to the limited number of non-white respondents the analysis combined their responses, making it challenging to pinpoint specific causes for this result. Another unexpected finding pertains to the effect of age on beliefs. While previous studies suggest that self-esteem typically increases with age, peaking at 50 to 60 years of age, our results show that respondents over 25 exhibit lower

self-worth compared to those under 25. Notably, lower first order beliefs among older respondents do not align with lower third order beliefs, suggesting that their lower self-esteem is not necessarily reflective of how they think others perceive them.

Furthermore, it is noteworthy that negative effects on self-worth beliefs (first and third order) correspond with negative effects on second order beliefs. Although low self-esteem may not directly result in negative perceptions of others, correlations may exist due to factors such as projection and invidious comparisons. However, as this study did not specifically focus on this connection, caution is necessary when drawing direct conclusions. Further investigation into the topic could shed light on the relationship between people's views of themselves and how it affects their perception of others.

Result 2: Effect of pictures

Results did not show a significant effect of pictures on second order beliefs, suggesting that it did not effectively evoke increased empathy towards others through visual stimuli. There were, however, significant effects of pictures on third order beliefs, indicating that viewing a photo of someone strengthens one's sense of being valued by them. This could be attributed to factors such as the smiling expressions of individuals in the photos, which may convey friendliness and warmth. It suggests that people respond positively to images of happy-looking individuals, thereby enhancing their own positive self-perceptions.

Second order beliefs increased when the target was a woman both in the picture and non-picture scenarios. This finding is consistent with previous literature that highlights a strong preference for female presence and companionship among both men and women. It is worth noting that the increase in second order beliefs was stronger in the women-only sample, matching the robust ingroup preference among women outlined in prior research. This increase extended to third order beliefs, indicating that the strong preference for women is mutual: women feel that other women value them more highly than a man would. There are various factors that could have contributed to this result: women often share similar life experiences and challenges, which can create a sense of sisterhood and understanding between them. Furthermore, women are prone to developing strong bonds with other women from an early age, and it is generally accepted that women feel safer and more comfortable in the presence of other women.

Interestingly, the increase in second order beliefs was lower when the woman was shown through a picture compared to when respondents were prompted to imagine a generic one. Various factors may have influenced respondents' perceptions and evaluations of the women in the pictures, such as physical attractiveness, facial expressions and non-verbal cues, but it is not possible to determine with certainty what may have caused this. Still, the photos were selected specifically to depict friendly, happy people, and the young women featured are conventionally attractive; research on the effect of photos in resumes has shown that women may face an 'attractiveness penalty' when judged by others, potentially contributing to these findings.

Another interpretation may stem from the idealization of the concept of womanhood. When prompted to imagine a generic woman, respondents may form abstract and idealized perceptions of women that are divorced from the complexities of real individuals. However, when confronted with actual images of women, this idealized perception may be disrupted as individuals compare them against their idealized and possibly unrealistic notions, resulting in a weaker increase in ratings.

Result 3: Inconsistencies within picture effects

Results of the gender analysis in this section mirror what was found in the previous one: there is a positive impact of gender both on second and third order beliefs. Concerning race, the impact of the image depicting a black individual on second order beliefs varies across specifications, with results ranging from a significant positive effect to a non-significant one. The statistical significance of these findings increases in the robustness test. These results suggest that our sample generally does not exhibit strong racist tendencies and appears to hold both white and black individuals in similar regard. However, as mentioned in the hypothesis section, significant positive effects observed in certain specifications may stem from respondents' attempts to portray themselves as unprejudiced – an attitude which is ultimately still preferable to overt racism.

It is noteworthy that in regressions conducted on different subsamples (shown in Table 9) race only significantly affects second order beliefs in the non-white subsample. This outcome implies that racial minorities may harbor more favorable views towards each other. Nevertheless, since responses from all non-white groups were aggregated, it remains uncertain whether this trend is

consistent across all racial minorities or is driven by specific groups. It is reasonable to assume that black respondents expressed higher second order beliefs for black people due to ingroup preferences.

Moreover, while the interaction effect resulted in a lower increase in second order beliefs towards black women, the overall valuation remained positive. The lack of significance of the race term could indicate that the increase in second order beliefs was driven by them being women, rather than by their race.

Interestingly, the depiction of a black person in pictures consistently led to a significant and positive effect on third order beliefs across all specifications. This, coupled with the lack of significance in the effect of race on second order beliefs, suggests that individuals feel more valued when the subject is black, but may not reciprocate this valuation.

A possible explanation for this phenomenon is that respondents may feel uncomfortable acknowledging their own racist tendencies. Even if a white individual is aware of issues of racism, they may not recognize their own contribution to the problem, especially if they see themselves as non-racist and strongly oppose racist ideologies. Implicit biases may make it so that well-intentioned people may not realize that some of the attitudes they hold are actually harmful. And it is likely because they have never been told they contribute to the problem directly: as mentioned in the literature, stigmatized individuals often employ compensatory strategies to avoid conflict with non-stigmatized individuals, which may result in instances where racial minorities feel uncomfortable or slighted without the white counterpart realizing it.

Ultimately, white men elicit the lowest third order beliefs, meaning that our sample feels that white men will not value them as highly as other groups. This finding aligns with the notion that women and black individuals tend to have positive experiences within their ingroups and negative experiences with the outgroup. Women exhibit a high ingroup bias toward other women and feel like this is reciprocated, leading to them feeling more valued by women than by men. Black individuals may perceive white men as potentially harboring racist attitudes, together with having an ingroup bias toward other black individuals. Future research could delve deeper into this by examining whether black or non-white individuals' second and third order beliefs vary depending on their experiences with racial discrimination in the past.

6.2 Limitations

A significant limiting factor within this research is the lack of responses from black individuals, which prevented a full exploration of their beliefs about the white outgroup. In the analysis section, I decided to group all non-white respondents together in order to analyze the aggregate beliefs of ethnic minorities about whites and blacks respectively – still, the perception of a black person by a latino or an asian person is likely different from that of another black person, particularly since these groups are not without their own anti-black sentiments (Sautman, 1994; Pérez et al., 2023). The results for the non-white sample may be difficult to interpret accurately as they represent the views of different ethnic groups with different experiences of racism.

Another limitation in this study was the selection of photos. Although efforts were made to select photos of people with similar levels of attractiveness, poses and expressions, it was difficult to find them within the photos available on Pexels. Furthermore, a pre-test to assess the attractiveness of a set of sample photos would have been beneficial. This would have helped to determine which photos to use based on similar attractiveness ratings. Additionally, it would have been preferable if all individuals in the photograph were either facing the camera or gazing into the distance. Future research could utilize volunteers to be photographed to ensure greater control over their appearance, pose and expression.

6.3 Future Research

Future research could investigate the interplay between first, second, and third order beliefs and their influence on each other. For instance, an interesting avenue to explore is the relationship between self-esteem and evaluation of others. It would be valuable to explore whether first order beliefs influence second order beliefs, for example, if people with higher self-esteem tend to in turn also be more positive about others. Furthermore, examining the relationship between second and third order beliefs can shed light on whether people who value others more tend to anticipate reciprocal generosity in others' valuations.

Both our findings and those of Flores Almeyda (2023) consistently indicate that third order beliefs are consistently lower than first and second order beliefs, even when our samples had a relatively high average self-esteem. Further examining the inconsistencies between beliefs and what is causing them could be an interesting topic to explore. For instance, would first order beliefs be lower if third order beliefs were elicited before them, making external judgments salient?

Furthermore, expanding the scope of research to include different types of pictures could offer valuable insights, for example by investigating whether the results remain consistent when using images depicting solely young or old individuals, or conventionally attractive versus conventionally unattractive people. Another interesting avenue for research would be to repeat the analysis using photos of people with neutral expression, to see if there would still be a significant increase in third order beliefs even if the people shown appear less warm and friendly. Additionally, further examination of the watchful eyes effect could give valuable insights on the impact of eye contact on interpersonal perceptions. This could be further investigated by seeing whether valuations increase when the picture shows someone looking directly at the camera compared to someone looking in the distance.

Lastly, further research on colorism using photos could deepen our understanding of societal biases. Using photos of black people with varying skin tones but similar levels of attractiveness as determined in a pre-test could explore whether valuation differs based on skin tone. Furthermore, seeing whether valuations are consistent or differ between respondents who are white, black or belong to different ethnic samples could provide valuable insights on the prevalence of colorism within different groups and cultures.

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Appendix A: Original Survey

The following link leads to a replica of the original survey:

https://tilburgss.co1.qualtrics.com/jfe/form/SV_aag3o6cnwnzFHh4

The replica differs from the original in that it does not require forced responses, making it easier to go through.

Appendix B: Photos

Photo of young, white man by ROMAN ODINTSOV from Pexels:
https://www.pexels.com/photo/young-man-with-tattoos-in-a-flower-shirt-standing-and-smiling-4925827/

Photo of old, white man by Andrea Piacquadio from Pexels:
https://www.pexels.com/photo/adult-man-wearing-green-jacket-3781916/

Photo of young, white woman by Andrea Piacquadio from Pexels:
https://www.pexels.com/photo/woman-wearing-yellow-button-up-long-sleeved-dress-shirt-774095/

Photo of old, white woman by Pavel Danilyuk from Pexels:
https://www.pexels.com/photo/close-up-shot-of-an-elderly-woman-smiling-6874146/

Photo of young, black man by Ivan Samkov from Pexels:
https://www.pexels.com/photo/a-man-in-white-shirt-sitting-on-the-floor-while-smiling-at-the-camera-8508755/

Photo of old, black man by Kampus Production from Pexels:
https://www.pexels.com/photo/portrait-of-an-elderly-man-smiling-6667746/

Photo of young, black woman Ogo Johnson from Pexels:
https://www.pexels.com/photo/woman-wearing-orange-v-neck-overall-dress-sitting-on-chair-2434049/

Photo of old, black woman by Nashua Volquez-Young from Pexels:
https://www.pexels.com/photo/woman-wearing-red-hat-and-sunglasses-1729931/

Photo of dog by Vanserline Vandenberg from Pexels:
https://www.pexels.com/photo/pomeranian-puppy-1619690/

Photo of cat by Pixabay from Pexels:
https://www.pexels.com/photo/close-up-photo-of-yellow-and-white-cat-57416/